SEQUENCE LISTING

<110> OLIVER, STEPHEN P.
      ALMEIDA, RAUL A.
      LUTHER, DOUGLAS A.
      PARK, HEE-MYUNG

<120> STREPTOCOCCUS UBERIS ADHESION MOLECULE

<130> HME/7477.0017

<140>
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<150> US 60/429,499
<151> 2002-11-26

<160> 17

<170> PatentIn Ver. 2.1

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<213> Streptococcus uberis

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             20                  25                  30

Leu Lys Phe Leu Lys Met Ser Arg Thr Ile Lys Ser Ser Leu Lys Leu
         35                  40                  45

Gly Ile Phe Leu Thr Ile Tyr Asn Val Trp Arg Glu Lys Gly Asn Ile
     50                  55                  60

Met Glu Phe Glu Asn Thr Lys Ser Asn Gln Ile Lys Thr Thr Leu Ala
 65                  70                  75                  80

Leu Thr Ser Thr Leu Ala Leu Leu Gly Thr Gly Val Gly Met Gly His
                 85                  90                  95

Thr Val Asn Ala Asp Asp Met Thr Thr Ala Asp Gln Ser Pro Lys Leu
                100                 105                 110

Gln Gly Glu Glu Ala Thr Leu Ala Pro Thr Asn Ile Glu Asp Thr Lys
         115                 120                 125

Ala Ala Ile Asp Ile Lys Thr Ala Thr Leu Ala Glu Gln Thr Asp Ala
     130                 135                 140
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Leu Asn Thr Val Asn Glu Thr Ile Thr Ser Thr Asn Glu Glu Leu Ala
145   150   155   160

Thr Leu Glu Gly Gly Leu Ala Asp Lys Glu Thr Ala Val Ala Asp Ala
                165   170   175

Glu Lys Thr Leu Glu Ser Val Ser Asn Ala Ser Glu Glu Glu Phe Asn
            180   185   190

Gln Leu Ala Glu Gln Asn Lys Ala Asp Leu Ala Lys Thr Gln Glu Glu
        195   200   205

Leu Lys Leu Ala Glu Ala Thr Lys Glu Glu Val Ala Thr Gln Val Leu
    210   215   220

Thr Gln Ser Asp Glu Val Thr Ala Ala Ala Asn Glu Ala Lys Lys Met
225   230   235   240

Ala Glu Lys Val Ala Gln Ala Glu Thr Lys Val Ser Asp Leu Thr Lys
            245   250   255

Met Val Asn Gln Pro Glu Ala Ile Thr Ala Gln Val Glu Ile Glu Gln
            260   265   270

Asn Asn Val Lys Ile Ile Ser Glu Asp Leu Ala Lys Ala Lys Thr Asp
        275   280   285

Leu Val Ala Val Thr Asp Asn Thr Lys Thr Gln Leu Ala Asn Asp Leu
    290   295   300

Ala Thr Ala Gln Ser Ser Leu Ser Ala Lys Gln Asn Glu Leu Ala Lys
305   310   315   320

Val Gln Ser Gln Thr Ser Asn Val Ala Val Asn Val Met Gly Ala Asn
            325   330   335

Lys Met Val Ala Pro Thr Asn Tyr Pro Ile Asn Glu Ile Lys Lys Leu
        340   345   350

Met Ser Ser Gly Tyr Ile Gly Thr Gln Ser Tyr Leu Asn Thr Phe Tyr
        355   360   365

Ala Leu Lys Asp Gln Leu Val Ser Lys Ala Glu Val Gly Ala Tyr Leu
    370   375   380

Asn His Tyr Val Asp Ile Ala Ser Asp Leu Asn Arg Ile Val Asn Pro
385   390   395   400

Asp Asn Leu Ser Val Glu Val Gln Asn Glu Leu Ala Val Phe Ala Ala
            405   410   415

Thr Leu Ile Asn Ser Val Arg Gln Gln Phe Gly Leu Ser Ala Val Glu
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Val Thr Gln Gly Ala Gln Glu Phe Ala Arg Thr Leu Thr Arg Asn Tyr
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Lys Val Thr His Gly Asn Thr Val Pro Phe Phe Asn Tyr Asn Gln Pro
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Gly Lys Asn Gly His Ile Gly Ile Gly Pro His Asp Arg Thr Ile Ile
465             470             475             480

Glu Gln Ala Ala Thr Ser Val Gly Leu Lys Ala Asn Asp Asp Asn Met
            485             490             495

Tyr Glu Asn Ile Gly Phe Phe Asp Asp Val His Thr Val Asn Gly Ile
            500             505             510

Lys Arg Ser Ile Tyr Asn Ser Ile Lys Tyr Met Leu Phe Thr Asp Phe
        515             520             525

Thr Tyr Gly Asn Thr Phe Gly His Thr Val Asn Leu Leu Arg Ser Asp
    530             535             540

Lys Thr Asn Pro Ser Ala Pro Val Tyr Leu Gly Val Ser Thr Glu Thr
545             550             555             560

Val Gly Gly Leu Asn Thr His Tyr Val Ile Phe Pro Ala Ser Asn Ile
            565             570             575

Val Asn Ala Ser Gln Phe Ser Lys Gln Val Val Ser Gly Pro Leu Thr
            580             585             590

Thr Val Asp Asn Ser Ala Lys Ile Ser Thr Leu Gln Ala Ser Ile Thr
    595             600             605

Ser Val Glu Ser Lys Ile Gln Thr Leu Gln Lys Arg Ile Ala Asn Ile
    610             615             620

Ser Ser Glu Ala Leu Val Val Ser Ala Gln Arg Lys Val Asp Gly Leu
625             630             635             640

Ala Ala Lys Leu Gln Lys Ala Glu Ser Asn Val Glu Lys Ala Lys Ala
            645             650             655

Gln Leu Gln Gln Leu Gln Asp Ser Lys Glu Asp Leu His Lys Gln Leu
            660             665             670

Ala Phe Ser Leu Ser Thr Arg Lys Asp Leu Lys Gly Gln Leu Asp Glu
        675             680             685

Ser Leu Val His Leu Asn Gln Ser Lys Ile Leu Leu His Ser Leu Glu
    690             695             700

Glu Lys Gln Ser Gln Val Ala Ser Gln Ile Asn Val Leu Thr Leu Lys
705             710             715             720

Lys Ala Gln Leu Glu Lys Glu Leu Ala Phe Asn Ser His Pro Asn Arg
            725             730             735

Glu Lys Val Ala Lys Glu Lys Val Glu Glu Ala Gln Lys Ala Leu Thr
            740             745             750
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Thr Gln Glu Lys Ala Lys Leu Thr Ser Ala Ile Thr Thr Thr Glu Gln
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Gln Ile Val Leu Leu Lys Asn His Leu Ala Asn Gln Val Ala Asn Ala
785             790             795             800

Pro Lys Ile Ser Ser Ile Val Gln Arg Ser Glu Asn Asn Arg Val Arg
            805             810             815

Pro Asp Val Ser Asp Thr Arg Glu Lys Ala Val Asp Thr Ala Gln Glu
        820             825             830

Ala Thr Ile Leu Ala Gln Ala Glu Thr Met Ala Glu Glu Val Ile Thr
        835             840             845

Asn Ser Ala Lys Ala Ile Val Ala Asn Ala Gln Asn Val Ala Gln Glu
    850             855             860

Ile Met Lys Val Ala Pro Glu Val Thr Pro Asp Gln Gly Val Val Ala
865             870             875             880

Lys Val Ala Asp Asn Ile Lys Lys Asn Asn Ala Pro Ala Ser Lys Ser
            885             890             895

Tyr Gly Ala Ser Ser Ser Thr Val Gly Asn Ala Thr Ser Ser Arg Asp
        900             905             910

Glu Ser Thr Lys Arg Ala Leu Arg Ala Gly Ile Val Met Leu Ala Ala
    915             920             925

Ala Gly Leu Thr Gly Tyr Lys Leu Arg Arg Asp Gly Lys Lys Glu Asn
    930             935             940

Gln Arg Lys Asn Leu Thr Glu Ser Thr Val Tyr Val Thr Ile Val Asp
945             950             955             960

Gly Thr Phe Tyr Phe Trp Ser Leu Lys Ser Val Gln Arg Arg Ala Asp
            965             970             975

Asn Cys Cys Lys Ser Thr His Arg Tyr Arg Leu Ser Pro Ser Ala Ile
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<213> Streptococcus uberis

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gctgataaag aaacagcagt tgcagatgct gaaaaaacat tggagtctgt ttcaaatgcc 540
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<212> DNA
<213> Streptococcus uberis

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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

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<210> 7
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

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<210> 8
<211> 23
<212> DNA
<213> Artificial Sequence

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

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<210> 10
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<210> 11
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<213> Streptococcus uberis

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<223> Ile or Ala

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<223> Val or Lys

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Xaa Leu Xaa Xaa
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<213> Streptococcus uberis

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<210> 14
<211> 26
<212> PRT
<213> Streptococcus uberis

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His Ile Asn His Cys Leu Lys Phe Leu Lys
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Ile Tyr Asn Val Trp Arg Glu Lys Gly Asn Ile Met Glu Leu Glu Asn
             20   25   30

Thr Lys Ser Asn Gln Ile Lys Thr Thr Leu Ala Leu Thr Ser Thr Leu
        35   40   45

Ala Leu Leu Gly Thr Gly Val Gly Met Gly His Thr Val Asn Ala Asp
     50   55   60

Asp Met Thr Thr Ala Asp Gln Ser Pro Lys Leu Gln Gly Glu Glu Ala
 65   70   75   80

Thr Leu Ala Pro Thr Asn Ile Glu Asp Thr Lys Ala Ala Ile Asp Thr
                 85   90   95

Lys Thr Ala Thr Leu Ala Glu Gln Thr Asp Ala Leu Asn Thr Val Asn
             100   105   110

Glu Thr Ile Thr Ser Thr Asn Glu Glu Leu Ala Thr Leu Glu Gly Gly
         115   120   125

Leu Ala Asp Lys Glu Thr Ala Val Ala Asp Ala Glu Lys Thr Leu Glu
     130   135   140

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Ser Val Ser Asn Ala Ser Glu Glu Glu Phe Asn Gln Leu Ala Glu Gln
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Asn Lys Ala Asp Leu Ala Lys Thr Gln Glu Glu Leu Lys Leu Ala Glu
            165             170             175

Ala Thr Lys Glu Glu Val Ala Thr Gln Val Leu Thr Gln Ser Asp Glu
            180             185             190

Val Thr Ala Ala Ala Asn Glu Ala Lys Lys Met Ala Glu Lys Val Ala
            195             200             205

Gln Ala Glu Thr Lys Val Ser Asp Leu Thr Lys Met Val Asn Gln Pro
    210             215             220

Glu Ala Ile Thr Ala Gln Val Glu Ile Glu Gln Asn Asn Val Lys Ile
225             230             235             240

Ile Ser Glu Asp Leu Ala Lys Ala Lys Thr Asp Leu Val Ala Val Thr
            245             250             255

Asp Asn Thr Lys Thr Gln Leu Ala Asn Asp Leu Ala Thr Ala Gln Ser
            260             265             270

Ser Leu Ser Ala Lys Gln Asn Glu Leu Ala Lys Val Gln Ser Gln Thr
    275             280             285

Ser Asn Val Ala Val Asn Val Met Gly Ala Asn Lys Met Val Ala Pro
    290             295             300

Thr Asn Tyr Pro Ile Asn Glu Ile Lys Lys Leu Met Ser Ser Gly Tyr
305             310             315             320

Ile Gly Thr Gln Ser Tyr Leu Asn Thr Phe Tyr Ala Leu Lys Asp Gln
            325             330             335

Leu Val Ser Lys Ala Glu Val Gly Ala Tyr Leu Asn His Tyr Val Asp
            340             345             350

Ile Ala Ser Asp Leu Asn Arg Ile Val Asn Pro Asp Asn Leu Ser Val
            355             360             365

Glu Val Gln Asn Glu Leu Ala Val Phe Ala Ala Thr Leu Ile Asn Ser
    370             375             380

Val Arg Gln Gln Phe Gly Leu Ser Ala Val Glu Val Thr Gln Gly Ala
385             390             395             400

Gln Glu Phe Ala Arg Thr Leu Thr Gln Asn Tyr Lys Ala Thr His Gly
            405             410             415

Asn Thr Val Pro Phe Phe Asn Tyr Asn Gln Pro Gly Lys Asn Gly His
            420             425             430

Ile Gly Ile Gly Pro His Asp Arg Thr Ile Ile Glu Gln Ala Ala Thr
    435             440             445
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Ser Val Gly Leu Lys Ala Asn Asp Asp Asn Met Tyr Glu Asn Ile Gly
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Asn Ser Ile Lys Tyr Met Leu Phe Thr Asp Leu Thr Tyr Gly Asn Thr
            485             490                 495
Phe Gly His Thr Val Asn Leu Leu Arg Ser Asp Lys Thr Asn Pro Ser
            500             505             510
Ala Pro Val Tyr Leu Gly Val Ser Thr Glu Thr Val Gly Gly Leu Asn
        515             520             525
Thr His Tyr Val Ile Phe Pro Ala Ser Asn Ile Val Asn Ala Ser Gln
    530             535             540
Phe Ser Lys Gln Val Val Ser Gly Pro Leu Thr Thr Val Asp Asn Ser
545             550             555                 560
Ala Lys Ile Ser Thr Leu Gln Ala Ser Ile Ala Ser Val Glu Ser Lys
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Asn Gln Ser Lys Ile Leu Phe His Ser Leu Glu Glu Lys Gln Ser Gln
            660             665             670
Val Ala Ser Gln Ile Asn Val Leu Thr Leu Lys Lys Ala Gln Leu Glu
            675             680             685
Lys Glu Leu Ala Phe Asn Ser His Pro Asn Arg Glu Lys Val Ala Lys
    690             695             700
Glu Lys Val Glu Glu Ala Gln Lys Ala Leu Thr Glu Thr Leu Ser Gln
705             710             715                 720
Ile Lys Thr Lys Lys Ala Ile Leu Asn Asp Leu Thr Gln Glu Lys Ala
            725             730             735
Lys Leu Thr Ser Ala Ile Thr Thr Thr Glu Gln Gln Ile Val Leu Leu
            740             745             750
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Lys Asn His Leu Ala Asn Gln Val Ala Asn Ala Pro Lys Ile Ser Ser
        755             760             765

Ile Val Gln Arg Ser Glu Asn Asn Gly Val Arg Pro Asp Val Ser Asp
        770             775             780

Thr Arg Glu Lys Ala Val Asp Thr Ala Gln Glu Ala Thr Ile Leu Ala
785             790             795             800

Gln Ala Glu Thr Met Ala Glu Glu Val Ile Thr Asn Ser Ala Lys Ala
            805             810             815

Ile Val Ala Asn Ala Gln Asn Val Ala Gln Glu Ile Met Lys Val Ala
            820             825             830

Pro Glu Val Thr Pro Asp Gln Gly Val Val Ala Lys Val Ala Asp Asn
        835             840             845

Ile Lys Lys Asn Asn Ala Pro Ala Ser Lys Ser Tyr Gly Ala Ser Ser
    850             855             860

Ser Thr Val Gly Asn Ala Thr Ser Ser Arg Asp Glu Ser Thr Lys Arg
865             870             875             880

Ala Leu Arg Ala Gly Ile Val Met Leu Ala Ala Ala Gly Leu Thr Gly
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Tyr Lys Leu Arg Arg Asp Gly Lys Lys
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Phe Trp Ser Leu Lys Ser Val Gln Arg Arg Ala Asp Asn Cys Cys Lys
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Ser Thr His Arg Tyr Arg Leu Ser Pro Ser Ala Ile Ser Thr
        35              40              45
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